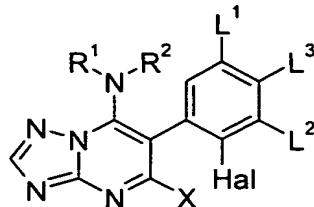


We claim:

1. A triazolopyrimidine of the formula I

5



I

in which the substituents are as defined below:

R<sup>1</sup>, R<sup>2</sup> independently of one another are C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl, C<sub>3</sub>-C<sub>6</sub>-halocycloalkyl, C<sub>2</sub>-C<sub>6</sub>-alkenyl, C<sub>2</sub>-C<sub>6</sub>-haloalkenyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkenyl, C<sub>3</sub>-C<sub>6</sub>-halocycloalkenyl, C<sub>2</sub>-C<sub>6</sub>-alkynyl, C<sub>2</sub>-C<sub>6</sub>-

haloalkynyl or phenyl, naphthyl, or a five- or six-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,

15

R<sup>1</sup> and R<sup>2</sup> together with the nitrogen atom to which they are attached may also form a five- or six-membered heterocycl or heteraryl which is attached via N and may contain a further heteroatom from the group consisting of O, N and S as ring member and/or may carry one or more

20

substituents from the group consisting of halogen, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>2</sub>-C<sub>6</sub>-alkenyl, C<sub>2</sub>-C<sub>6</sub>-haloalkenyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-haloalkoxy, C<sub>3</sub>-C<sub>6</sub>-alkenyloxy, C<sub>3</sub>-C<sub>6</sub>-haloalkenyloxy, C<sub>1</sub>-C<sub>6</sub>-alkylene and oxy-C<sub>1</sub>-C<sub>3</sub>-alkyleneoxy;

25

R<sup>1</sup> and/or R<sup>2</sup> may carry one to four identical or different groups R<sup>a</sup>:

R<sup>a</sup> is halogen, cyano, nitro, hydroxyl, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>1</sub>-C<sub>6</sub>-alkylcarbonyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-haloalkoxy,

30

C<sub>1</sub>-C<sub>6</sub>-alkoxycarbonyl, C<sub>1</sub>-C<sub>6</sub>-alkylthio, C<sub>1</sub>-C<sub>6</sub>-alkylamino, di-C<sub>1</sub>-C<sub>6</sub>-

alkylamino, C<sub>2</sub>-C<sub>8</sub>-alkenyl, C<sub>2</sub>-C<sub>8</sub>-haloalkenyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkenyl,

C<sub>2</sub>-C<sub>6</sub>-alkenyloxy, C<sub>3</sub>-C<sub>6</sub>-haloalkenyloxy, C<sub>2</sub>-C<sub>6</sub>-alkynyl, C<sub>2</sub>-C<sub>6</sub>-

haloalkynyl, C<sub>3</sub>-C<sub>6</sub>-alkynyloxy, C<sub>3</sub>-C<sub>6</sub>-haloalkynyloxy, C<sub>3</sub>-C<sub>6</sub>-cyclo-

alkoxy, C<sub>3</sub>-C<sub>6</sub>-cycloalkenyloxy, C<sub>1</sub>-C<sub>3</sub>-oxyalkyleneoxy, phenyl,

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naphthyl, a five- to ten-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,

where these aliphatic, alicyclic or aromatic groups for their part may be partially or fully halogenated or may carry one to three groups R<sup>b</sup>:

5            R<sup>b</sup>    is halogen, cyano, nitro, hydroxy, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, alkyl, haloalkyl, alkenyl, alkenyloxy, alkynyoxy, alkoxy, haloalkoxy, alkylthio, alkylamino, dialkylamino, formyl, alkylcarbonyl, alkylsulfonyl, alkylsulfoxyl, alkoxycarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, where the alkyl groups in these radicals contain 1 to 6 carbon atoms and the abovementioned alkenyl or alkynyl groups in these radicals contain 2 to 8 carbon atoms;

10            and/or one to three of the following radicals:

15            15            cycloalkyl, cycloalkoxy, heterocyclyl, heterocyclyloxy, where the cyclic systems contain 3 to 10 ring members; aryl, aryloxy, arylthio, aryl-C<sub>1</sub>-C<sub>6</sub>-alkoxy, aryl-C<sub>1</sub>-C<sub>6</sub>-alkyl, hetaryl, hetaryloxy, hetarylthio, where the aryl radicals preferably contain 6 to 10 ring members and the hetaryl radicals 5 or 6 ring members, where the cyclic systems may be partially or fully halogenated or substituted by alkyl or haloalkyl groups;

20

Hal    is halogen;

25

L<sup>1</sup>, L<sup>2</sup> are hydrogen, cyano, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>3</sub>-C<sub>6</sub>-alkenyloxy or C(=O)A, where at least one group L<sup>1</sup> or L<sup>2</sup> is not hydrogen;

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A            is hydrogen, hydroxy, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>1</sub>-C<sub>8</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-haloalkoxy, C<sub>1</sub>-C<sub>8</sub>-alkylamino or di-(C<sub>1</sub>-C<sub>8</sub>-alkyl)amino;

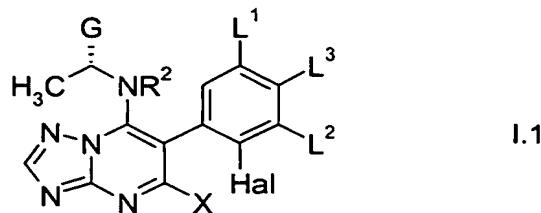
L<sup>3</sup>    is hydrogen, halogen, cyano, nitro, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-alkoxycarbonyl;

35

X            is halogen, cyano, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>2</sub>-haloalkoxy.

2.    The compound of the formula I as claimed in claim 1 in which R<sup>1</sup> is not hydrogen.

## 3. A compound of the formula I.1



5 in which

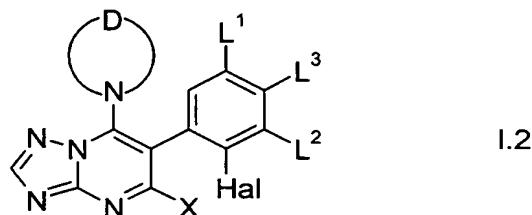
G is C<sub>2</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxymethyl or C<sub>3</sub>-C<sub>6</sub>-cycloalkyl;R<sup>2</sup> is hydrogen or methyl; and

X is chlorine, methyl, cyano, methoxy or ethoxy and

L<sup>1</sup> to L<sup>3</sup> and Hal are as defined in claim 1.

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## 4. A compound of the formula I.2



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in which

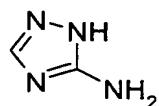
D together with the nitrogen atom forms a five- or six-membered heterocyclyl or heteroaryl which is attached via N and may contain a further heteroatom from the group consisting of O, N and S as ring member and/or may carry one or more substituents from the group consisting of halogen, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy and C<sub>1</sub>-C<sub>2</sub>-haloalkyl;

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X is chlorine, methyl, cyano, methoxy or ethoxy and

L<sup>1</sup> to L<sup>3</sup> and Hal are as defined in claim 1.

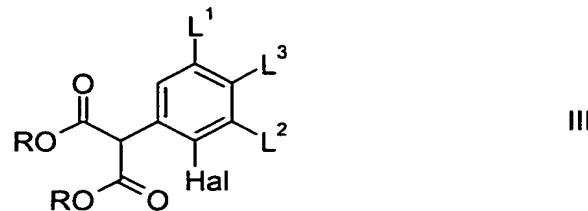
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5. A process for preparing the compounds of the formula I as claimed in claim 1 in which X is halogen, cyano, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>2</sub>-haloalkoxy, by reacting 5-aminotriazole of the formula II

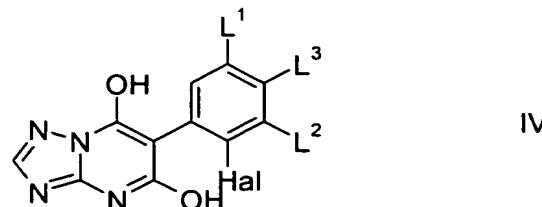
II

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with phenylmalonates of the formula III,

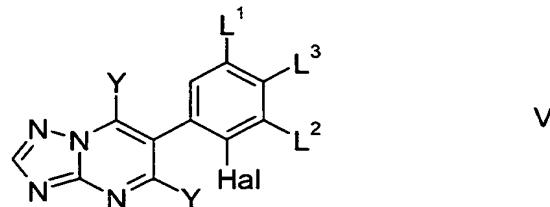


in which R is alkyl, to give dihydroxytriazolopyrimidines of the formula IV,



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halogenation to give the dihalo compounds of the formula V,



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in which Y is halogen and reaction of V with amines of the formula VI



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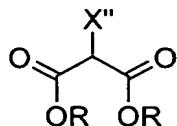
to give compounds of the formula I in which X is halogen, if desired, to prepare compounds of the formula I in which X is cyano, C<sub>1</sub>-C<sub>4</sub>-alkoxy or C<sub>1</sub>-C<sub>2</sub>-haloalkoxy, reaction of compounds I in which X is halogen with compounds of the formula VII

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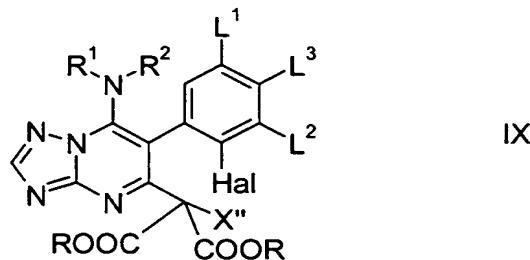
which, depending on the group X' to be introduced, are inorganic cyanides, alkoxides or haloalkoxides and in which M is an ammonium, tetraalkylammonium, alkali metal or alkaline earth metal cation, and, if desired, to prepare compounds of the formula I as claimed in claim 1 in which X is alkyl, by reaction of the compounds of the formula I in which X is halogen with malonates of the formula VIII

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VIII

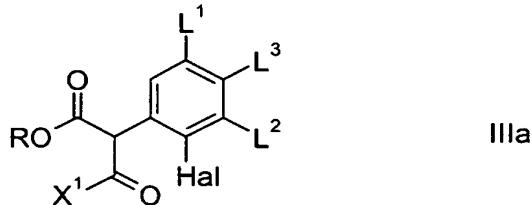
5 in which  $X''$  is hydrogen or  $C_1$ - $C_3$ -alkyl and R is  $C_1$ - $C_4$ -alkyl, to give compounds of the formula IX



and decarboxylation to give compounds I in which X is alkyl.

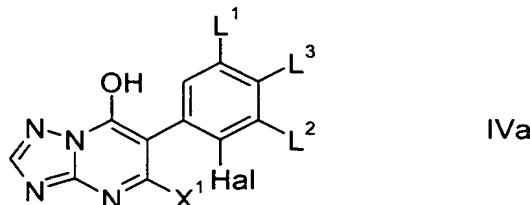
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6. A process for preparing the compounds of the formula I as claimed in claim 1 in which X is  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -haloalkyl by reacting 5-aminotriazole of the formula II as set forth in claim 5 with keto esters of the formula IIIa



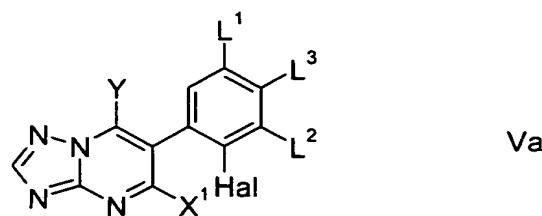
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in which  $X^1$  is  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -haloalkyl and R is  $C_1$ - $C_4$ -alkyl, to give 5-alkyl-7-hydroxy-6-phenyltriazolopyrimidines of the formula IVa,



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halogenation of IVa to give 7-halotriazolopyrimidines of the formula Va



in which Y is halogen and reaction of Va with amines of the formula VI as set forth in claim 5 to give compounds I in which X is C<sub>1</sub>-C<sub>4</sub>-alkyl or C<sub>1</sub>-C<sub>4</sub>-haloalkyl.

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7. A compound of the formula IV, IVa, V or Va as set forth in claims 5 and 6.
8. A fungicidal composition, comprising a solid or liquid carrier and a compound of the formula I as claimed in claim 1.
- 10 9. Seed, comprising 1 to 1000 g of a compound of the formula I as claimed in claim 1 per 100 kg.
- 15 10. A method for controlling phytopathogenic harmful fungi, which method comprises treating the fungi or the materials, plants, the soil or seeds to be protected against fungal attack with an effective amount of a compound of the formula I as claimed in claim 1.